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(71)Applicant : MATSUSHITA ELECTRIC IND CO LTD

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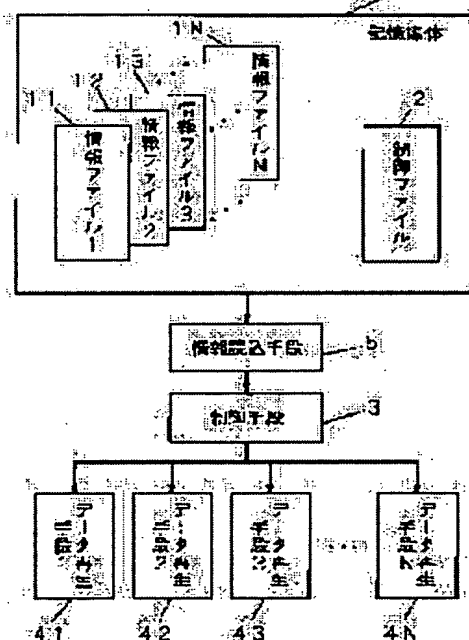
(72)Inventor : NAKANO YOSHIO

(54) REPRODUCER AND REPRODUCING METHOD FOR MULTIMEDIA RECORDING MEDIA
 AND RECORDING METHOD TO THE RECORDING MEDIA

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a multimedia data reproducing device interactively containing sentences, pictures and graphic data while mutually relating them or adding lapses of time also.

SOLUTION: This device is provided with an information read-in means 5 reading in information from recording media 1 in which multimedia data whose reproducing methods are different are recorded while including their reproduction control information and data reproducing means 41 to 4N performing data reproductions in accordance with data reproducing methods and a control means 3 controlling the data reproducing means 41 to 4N by analyzing the information read out by the information read-in means 5. The control means 3 performs following operations. The information read-in means 5 reads in information and reads in contents of corresponding data units or data elements according to indications of the reproduction control information of the data units or the data elements stated in the recording media 1 and then the control means 3 performs data reproducing indications to the data reproducing means 41 to 4N in accordance with data reproducing methods to reproduce multimedia data.



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[0005]

[Problems that the Invention is to Solve]

However, according to a picture file system, the retrieved information is displayed together with a still picture or a moving picture and the voice data attached thereto. In this case, the picture data and the voice data are stored in a set and the conventional multimedia data reproducing device defines a specific one scene temporally.

[0006]

In addition, a word processor can create a sentence including a picture in sentences and can create data that is substantially identical with a normal publication, however, the data is generally created in order to produce a hardcopy. Accordingly, although this data is sufficient for a material, it is too static for explanation means.

[0007]

The present invention has been made taking the foregoing problems into consideration and an object of which is to provide a multimedia data reproducing device interactively containing sentences, pictures and graphic data while mutually relating them or adding lapses of time also.

[0008]

[Means for Solving the Problems]

The present invention is provided with information read-in means of reading in information from recording media in which multimedia data whose reproducing methods are different are recorded while including their reproduction control information; data reproducing means of performing data reproductions in accordance with data reproducing methods; and control means of controlling the data reproducing means by analyzing the information read out by the information read-in means.

According to this configuration, it is possible to realize a multimedia data reproducing device interactively containing sentences, pictures and graphic data while mutually relating them or adding lapses of time also.

[0009]

[Mode for Carrying Out the Invention]

The present invention is provided with information read-in means of reading in information from recording media in which multimedia data whose reproducing methods are different are recorded while including a data unit including first reproduction control information indicating a data element, a reproducing order, and a reproducing method or the like and second reproduction control information indicating a reproducing order and a reproducing method or the like of the above-described data unit; data reproducing means of performing data reproductions in accordance with data element reproducing methods; and a

control means of analyzing a content of the data unit that is read by the above-described information read-in means, of extracting the first reproducing control information and the data element, and of instructing the data reproducing means to reproduce the data of the above-described data element according to indications of the second reproduction control information that is read by the above-described information read-in means and the above-described first control information. The control means may perform the following operations. At first, the information read-in means may read in the information. The reproduction control information of appropriate data unit or data element is stated in a recording media, and the information read-in means may read in contents of the corresponding data unit or data element according to indications of the reproduction control information. After that, the control means may issue data reproducing indications to the data reproducing means in accordance with data reproducing methods to reproduce multimedia data.

[0010]

The embodiments according to the present invention will be described below with reference to the drawings. FIG. 1 is a block diagram of a multimedia data reproducing device according to an embodiment of the present invention. In FIG. 1, a reference numeral 1 denotes a storage media (or a recording media), reference numerals 11 to 1N denote information files, a reference

numeral 2 denotes a control file, a reference numeral 3 denotes control means, reference numerals 41 to 4N denote data reproducing means, and a reference numeral 5 denotes information read-in means.

[0011]

A multimedia data reproducing device according to the present embodiment, which is configured as described above, will be described below.

[0012]

The information files 11 to 1N whose reproducing methods are different and the control file 2 are stored in the storage media 1. In one information file 1i, the information having the same reproducing methods are stored. The data reproducing means 41 to 4N correspond to the information files 11 to 1N. In other words, the data reproduction of the information file 1i depends on the data reproducing means 4i.

[0013]

Next, the configuration of the information file 1i will be described below. FIG. 2(a) shows its constitutional example. In the information file 1i, a plurality of data units 1i1, 1i2, ... are stored. For example, the data units are a paragraph of sentences, a portrait, a weather map, and a graph for population transit. The information of the data unit is completed within this unit. In the control file 2, output indications of the data unit 1nm within the information file 1n are cited (FIG.

2(b)).

[0014]

The operation of the control means 3 at this point will be described with reference to a flow chart of FIG. 3.

[0015]

(Step 1) The control means 3 reads in the control information (output indication) from the control file 2 by means of the information read-in means 5.

[0016]

(Step 2) If the read-in control information is the output indication of the data unit 1_m, the control means 3 takes out the m-th data unit from the information file 1_n by means of the information read-in means 5.

[0017]

(Step 3) The data reproduction of the data unit that is taken out to the corresponding data reproducing means 4_n is instructed.

[0018]

As described above, the data reproduction of one data unit is completed in the steps 1 to 3.

[0019]

(Step 4) Then, reading in the control information from the control file 2 once again by means of the information read-in means 5, and the above-described processing will be repeated until no control information is left in the control file 2.

[0020]

In addition, the control information can be incorporated in a specific information file. As a more specific embodiment, the control information that is incorporated in a sentence information file will be described below. In FIG. 4, a reference numeral 1T denotes a sentence information file and this constructs a data unit 1T1 in gross. A reference numeral 1P denotes a picture information file, a reference numeral 1G denotes a graphic information file, and a reference numeral 1V denotes a voice information file. In the picture information file 1P, the data units of 1P1, 1P2, ... are stored, in the graphic information file 1G, the data units of 1G1, 1G2, ... are stored, and in the voice information file 1V, the data units of 1V1, 1V2, ... are stored. A reference numeral 4T denotes a sentence data reproducing means, a reference numeral 4P denotes a picture data reproducing means, a reference numeral 4G denotes a graphic data reproducing means, and a reference numeral 4V denotes a voice data reproducing means. The sentence data reproducing mean 4T, the picture data reproducing means 4P, and the graphic data reproducing means 4G may reproduce the sentence information, the picture information, and the graphic information, respectively, in a CRT display. The voice data reproducing means 4V may reproduce the voice information in a speaker by means of a method such as voice synthesis or the like. In the sentence information file 1T, a sentence element as a plain text and control information are stated in mix. The control information has a

special format so as to be distinguished from the sentence element. For example, it has an expression format ". XY" from a head of a sentence. It is assumed that X represents information file identification, and Y represents a data unit number in this information file. In other words, if X = P, and Y = 5, the control information instructs output of the data unit 1P5. As its extended function, the control information has ".Ws" instructing stop of operation for s seconds and ".K" instructing waiting for a continued indication from a user (for example, waiting for entry from a keyboard or the like) or the like, and these are defined as extended control information.

[0021]

The operation of the control means 3 will be described with reference to a flow chart in FIG. 5.

[0022]

(Step 21) The control means 3 may read in the sentence information file 1T in which the control information is incorporated by means of the information read-in means 5.

[0023]

(Steps 22, 23) If the read-in information is a sentence element (a plain text), this information is transmitted to the sentence data reproducing means 4T and the sentence is displayed.

[0024]

(Steps 22 to 29) If the control information is ".XY", reading in the information of the corresponding data unit 1XY by means

of the information read-in means 5, this information is transmitted to the data reproducing means 4X in accordance with the reproducing method to be displayed.

[0025]

(Step 30) If the control information is the extended control information, the corresponding processing is carried out.

[0026]

As observed above, one data reproduction procedure is completed in the steps 21 to 30.

[0027]

(Step 31) Then, the control information is read in from the control file 2 once again by means of the information read-in means 5, and the above-described processing is repeated until no control information is left in the control file 2.

[0028]

As described above, according to the embodiment of the present invention, various multimedia data whose reproducing methods are different are composed in units in the information file, the unit data is taken out in accordance with the indications of the control information, and the control means of instructing the data reproducing means that is provided in response to the reproducing method to reproduce the data. Thereby, it is possible to carry out more complicated multimedia data reproduction. By an interactive conversation and key entry of YES/NO, the present embodiment can be applied to a determination

device, a diagnostic unit, and a learning machine very effectively.

[0029]

According to the multimedia data reproducing device of the embodiment of the present invention, it is assumed that the control information is incorporated in the specific information file, however, it is also possible that the control information is incorporated in a plurality of information files so as to interact with each other. FIG. 6 shows an example that the control information is incorporated in the data picture unit 1P5 shown in FIG. 4. The data unit 1P5 is configured by several control information and picture elements. This concept about the picture element is the same as that of the sentence element in the sentence data unit 1T1. If there is an indication of ". P5" during the data reproduction of the sentence data unit 1T1, the control means 3 may sequentially take out the picture element or the control information from the data unit 1P5 by means of the information read-in means 5. Then, if it is a picture element, the control means 3 may issue a data reproduction indication to the picture data reproducing means 4P, and if it is control information, the control means 3 may carry out the corresponding processing. Since this sequence of processing procedure can be easily understood from the explanation of the above-described embodiment, its detailed explanation is herein omitted. Thereby, more advanced multimedia data reproduction

can be realized.

[0030]

Since the information file and the control file are made in logical units, it is also possible to store the entire thereof into one physical file. When the data units of the information file are sequentially outputted, it is possible to omit Y of the control information. A format of the control information is not limited to ". XY" and it is a matter of course that the extended control may have many other contents than stop operation during defined period of time and waiting for a continued indication from the user.